

**Dr. UMESH KUMAR**

**DEPARTMENT OF BOTANY**

**U.R. COLLEGE ROSERA  
(SAMASTIPUR)**

**B.Sc. PART- II**  
**(BIOLOGY SUBSIDIARY).**  
**[GROUP- D]**

**(i) ECOSYSTEM AND ITS**  
**COMPONENTS.**

Ecosystem and its components

Ecosystem [oikos: environment] →

According to Fitzpatrick, 1974 "a group of organisms interacting among themselves and with environment is known as ecosystem."

Climate controls the development and distribution of plants and animals. On the other hand climate itself be affected by the nature of vegetation cover. Vegetation controls distribution of animal. In turns animals exert some effects on vegetation. Thus the word ecosystem refers to the give and take - the whole network of relationship - of each and every part - living and non-living. The term ecosystem was coined by A. G. Tansley in 1935.

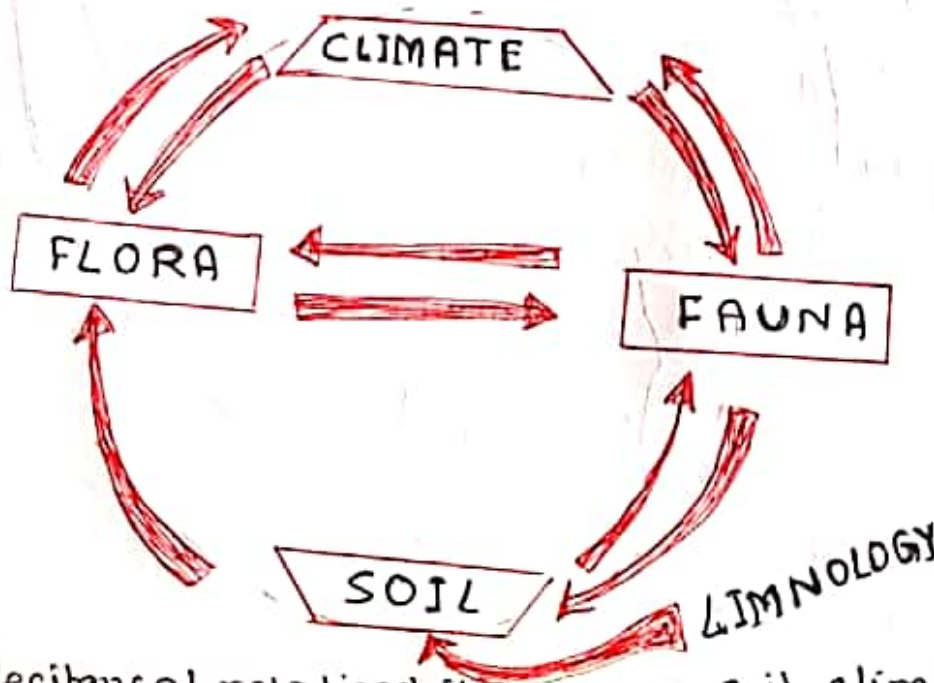


Figure - Reciprocal relationship between soil, climate, flora and fauna.

An ecosystem may be small (2) like a drop (microecosystem) of water and as large as a sea or tract of forest (mega ecosystem). A balanced aquarium is an artificially established and self-contained ecosystem. An ecosystem may be temporary as a freshwater pool or a field or permanent like a forest or sea.

Thus any area of nature that includes living organisms and non-living substances interacting, so that a flow of energy leads to characteristic trophic structure and cycling of material makes the ecosystem.

### Components of Ecosystem

For convenience ecosystem can be divided into two main components of factors.

- ① Abiotic components
- ② Biotic components

#### ① Abiotic or Non-living components

{ A: not } These components are  
 { bios: life } non-living and can

further be divided into following three parts -

① Climatic → It includes light, temperature, wind, water etc.

② Inorganic substances → These include nitrogen, calcium, sulphur, phosphorus etc.



① Organic compounds → These include ③ protein, carbohydrate, lipids. These are link between abiotic and biotic components.

② Biotic or living components → (Bios: life) → These components include life and are as follows -

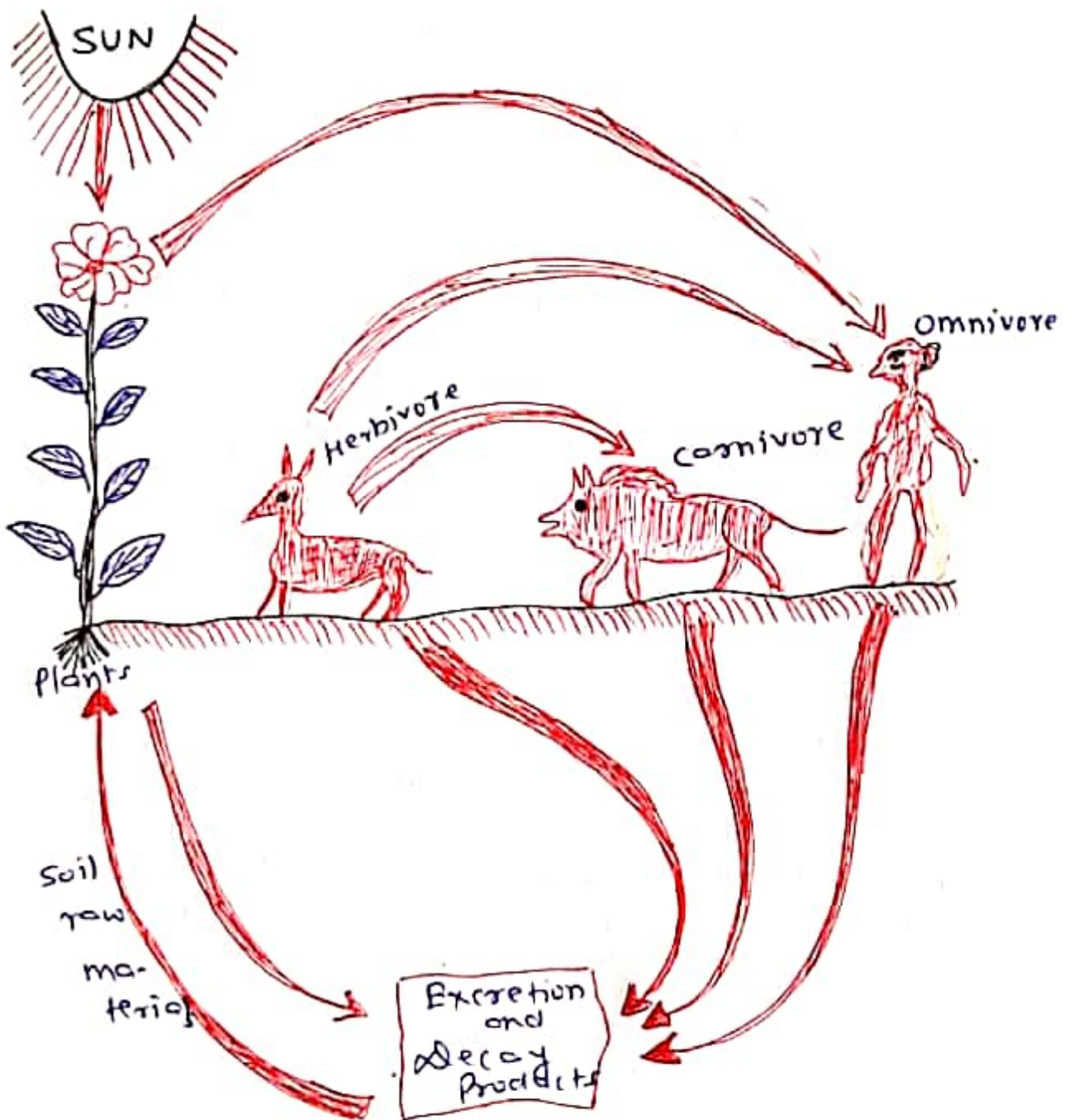
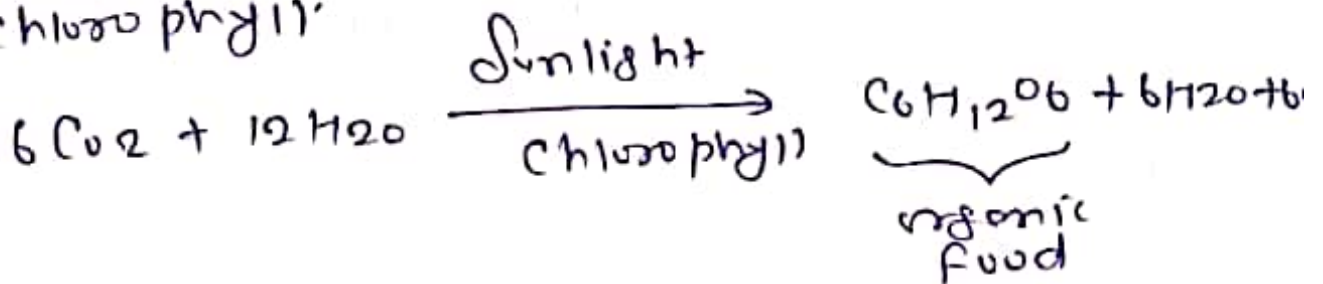


Figure - Basic nutritional link in a community.

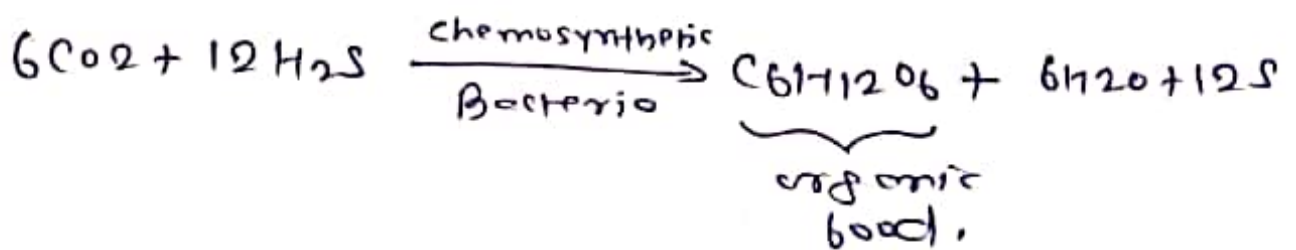
(A) Producers [Pro = forward, decess = to lead] (4)

Producers or autotrophs (green plants) are those living members of ecosystem which synthesize food from inorganic substances such as  $\text{CO}_2$  &  $\text{H}_2\text{O}$  in presence of sunlight by the help of chlorophyll.



On land producers are usually large rooted green plants, while in deep water ecosystems they are smaller algae floating or submerged in water.

Producers also include chemosynthetic bacteria



Autotrophs are sometimes called primary producers as distinguished from animals which although heterotrophic manufacture their lipid and proteins from foods taken from plants and are thus secondary producers.

⑤ Consumers [con: Altogether, sumere: ⑤ take up] →

They include heterotrophic organisms (animals) which depend on other organisms or particulate organic matter (food) produced by producers. They are also called phagotrophs.

The herbivores called primary consumers depend upon green plants for their food. Insects (beetles, bugs, ants), rodents and ruminants are the common herbivores in terrestrial habitats and small crustaceans and molluscs in aquatic habitats. Cow, goat, deer, rabbit etc. are the common animals which are primary consumers.

The herbivores are used as food by primary carnivores (secondary consumers) (e.g. grasshopper, frog) which in turn are used as food by secondary carnivores (tertiary consumers) (e.g. snake that eats frog or birds which eat fish).

In addition there may be top consumers (quaternary consumers) e.g., lion and vulture.



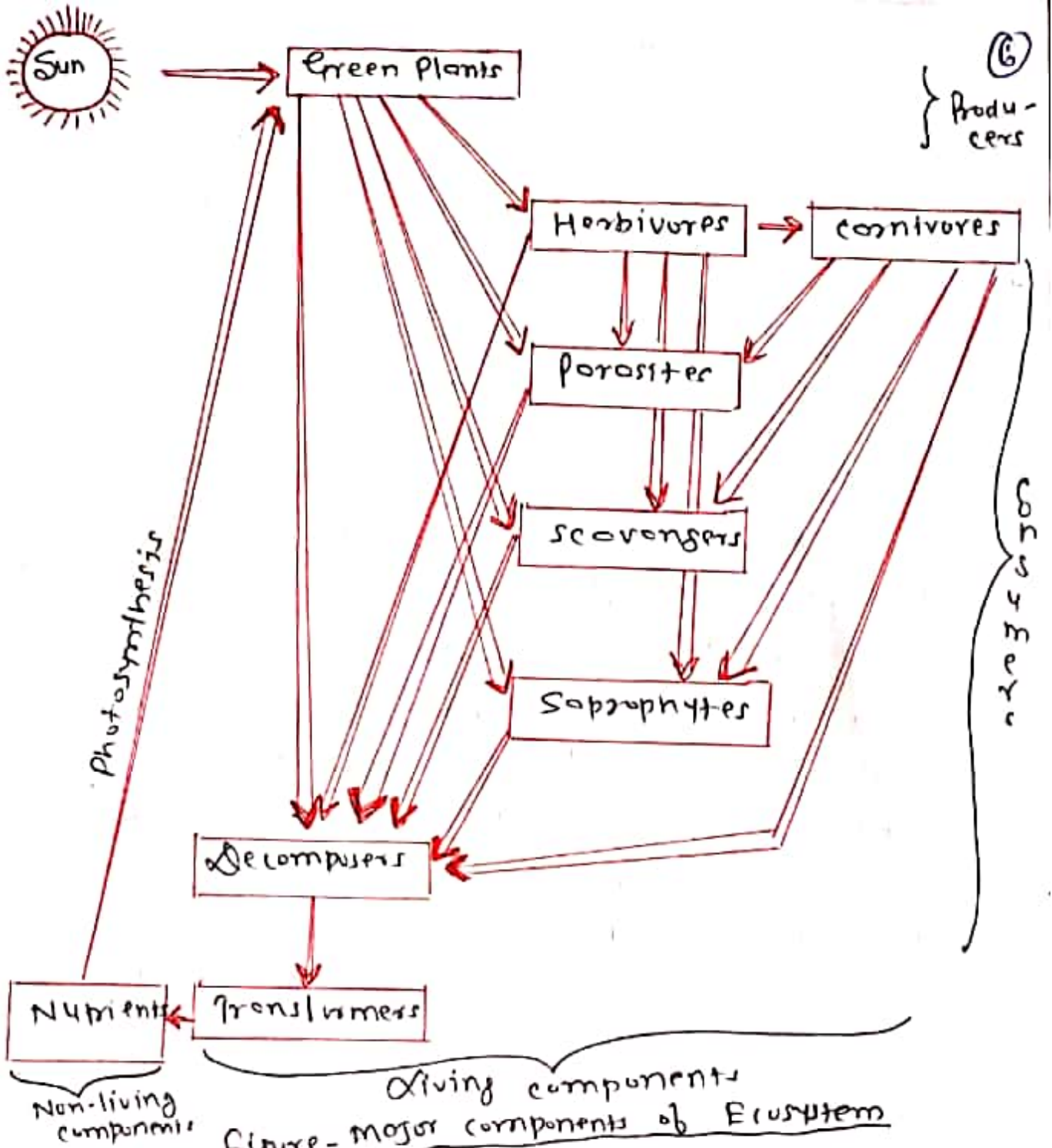


Figure - Major components of Ecosystem

### ① Decomposers [Decompose: Breakdown]

They include bacteria and fungi which attack the dead bodies of producers and consumers and breakdown the complex compounds of dead protoplasm, absorb some of the decomposition products and release inorganic nutrients. These inorganic substances along with other organic substances remaining in the soil are used as energy source by producers.



Decomposers are also called (7) 'Saprotrophs', or 'saprotrophs' or 'microconsumers'.

For a proper functioning of ecosystem continuous circulation of minerals is essential. These minerals enter biotic components and after their death and decay again enter the soil and atmosphere.

The source of energy in ecosystem is sun. The sunlight energy is converted by plants (primary producers) into chemical form of energy, which is then available to the consumers with the help of which they carry their biological activities.

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Dr. Umesh Kumar

Department of Botany

U.R. College, Rewari

At LNIMU, Deobhar.

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